

SPECIFICATION

Device Name : POWER MOSFET

Type Name : 2SK2871-01

Spec. No. :

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Fuji Electric Co.,Ltd.
Matsumoto Factory

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- 1.Scope This specifies Fuji Power MOSFET 2SK2871-01
- 2.Construction N-Channel enhancement mode power MOSFET
- 3.Applications for Switching
- 4.Outview TO-220 Outview See to 5/12 page

5.Absolute Maximum Ratings at Tc=25°C (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-Source Voltage	V _{DS}	450	V	
Continuous Drain Current	I _D	±8	A	
Pulsed Drain Current	I _{DP}	±32	A	
Gate-Source Voltage	V _{GS}	±35	V	
Repetitive or non-repetitive	I _{AV}	8	A	T _{ch} ≤ 150°C
Maximum Avalanche Energy	E _{AV}	215.9	mJ	*1
Maximum Power Dissipation	P _D	50	W	
Operating and Storage	T _{ch}	150	°C	
Temperature range	T _{stg}	-55 to +150	°C	

*1 L=6.19mH, Vcc=45V

6.Electrical Characteristics at Tc=25°C (unless otherwise specified)

Static Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =1mA V _{GS} =0V	450	-	-	V
Gate Threshold Voltage	V _{GS(th)}	I _D =1mA V _{DS} =V _{GS}	3.5	4.0	4.5	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =450V T _{ch} =25°C	-	10	500	μA
		V _{GS} =0V T _{ch} =125°C	-	0.2	1.0	mA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±35V V _{DS} =0V	-	10	100	nA
Drain-Source On-State Resistance	R _{DS(on)}	I _D =4A V _{GS} =10V	-	1.0	1.2	Ω

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Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	g_{fs}	$I_D=4A$ $V_{DS}=25V$	2	4	-	S
Input Capacitance	C_{iss}	$V_{DS}=25V$	-	540	810	pF
Output Capacitance	C_{oss}	$V_{GS}=0V$	-	100	150	
Reverse Transfer Capacitance	C_{rss}	$f=1MHz$	-	45	70	
Turn-On Time	$t_{d(on)}$	$V_{cc}=300V$	-	13	20	ns
	t_r	$V_{GS}=10V$	-	45	70	
Turn-Off Time	$t_{d(off)}$	$I_D=8A$	-	40	60	
	t_f	$R_{GS}=10\Omega$	-	25	40	

Reverse Diode

Description	Symbol	Conditions	min.	typ.	max.	Unit
Avalanche Capability	I_{AV}	$L=6.19mH$ $T_{ch}=25^\circ C$ See Fig.1 and Fig.2	8	-	-	A
Diode Forward On-Voltage	V_{SD}	$I_F=2 \times I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$	-	1.1	1.65	V
Reverse Recovery Time	t_{rr}	$I_F=I_{DR}$	-	450	-	ns
Reverse Recovery Charge	Q_{rr}	$-di/dt=100A/\mu s$ $T_{ch}=25^\circ C$	-	3.7	-	μC

7. Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	$R_{th(ch-c)}$			2.50	$^\circ C/W$
Channel to Ambient	$R_{th(ch-a)}$			125	$^\circ C/W$

Fig.1 Test circuit

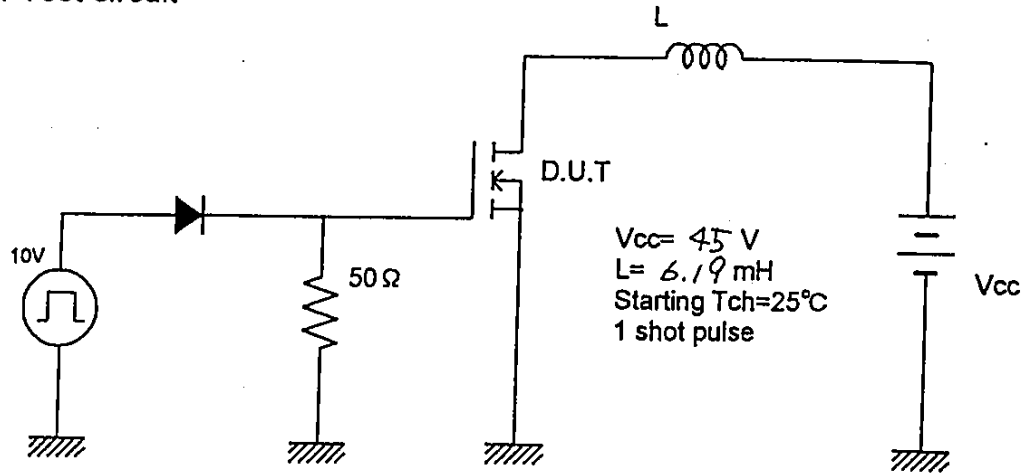
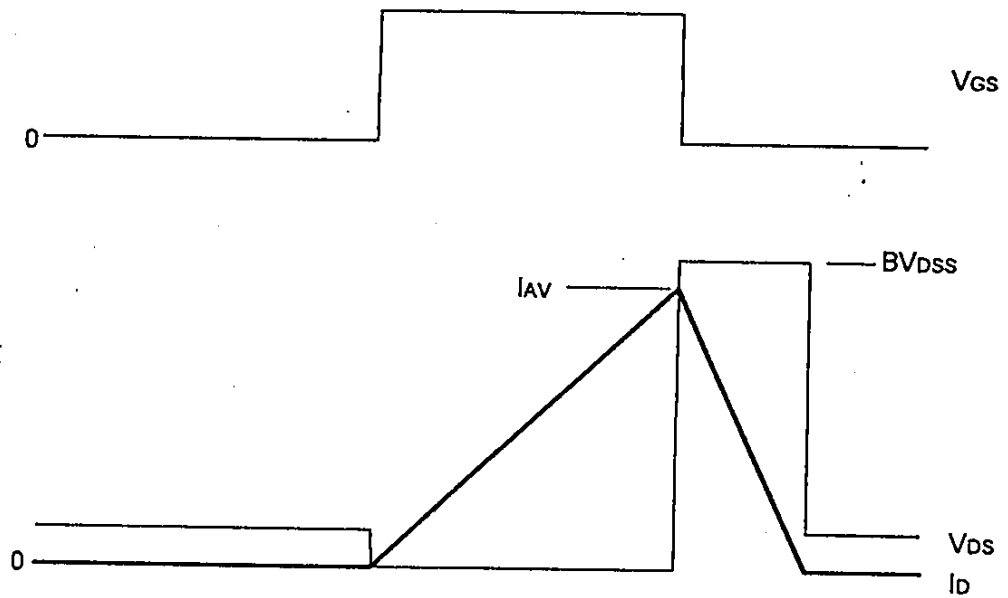


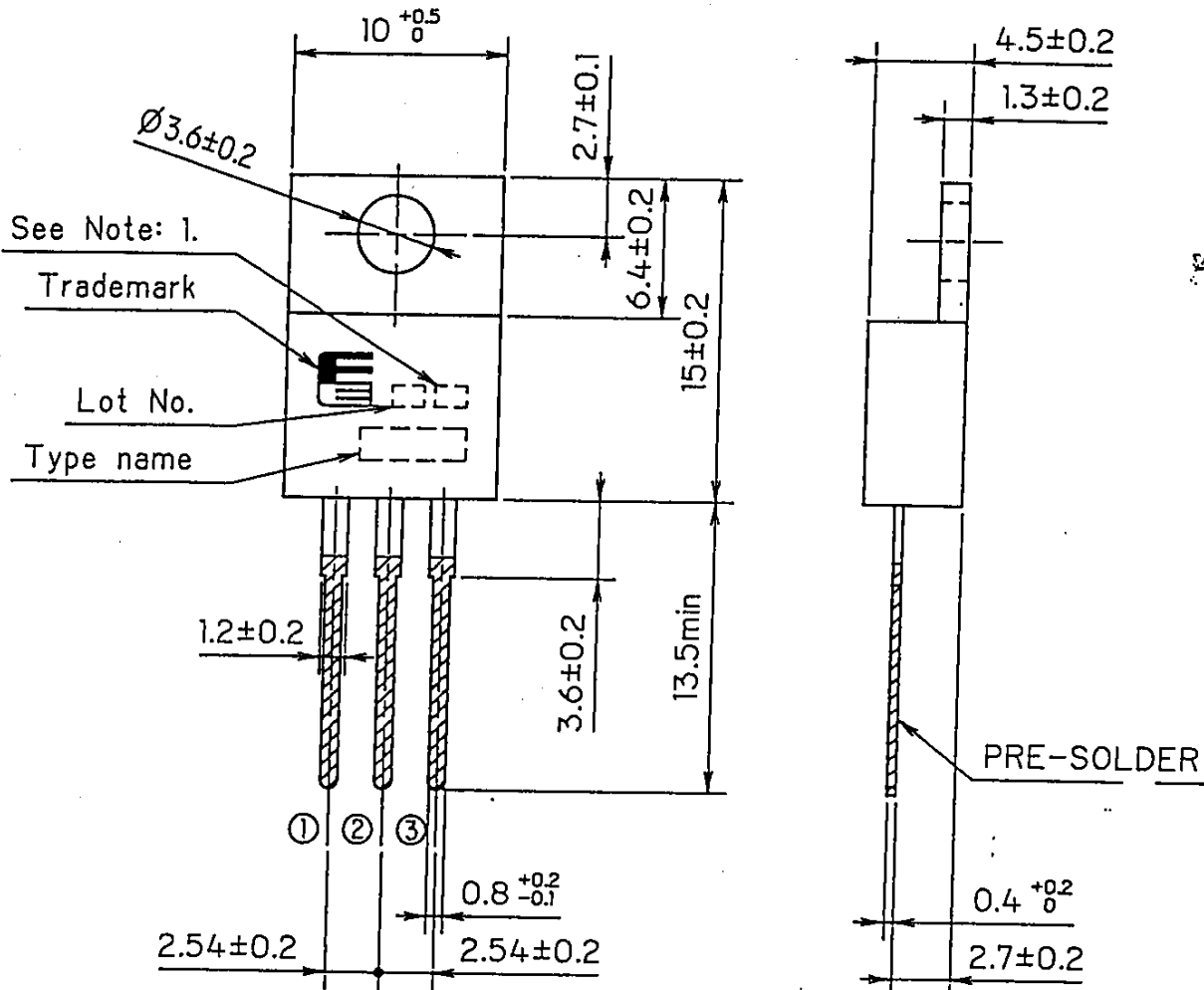
Fig.2 Operating waveforms



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FUJI POWER MOS FET

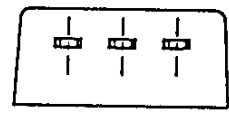
TYPE :



See Note: 1.
 Trademark
 Lot No.
 Type name

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CONNECTION



- ① GATE
- ② DRAIN
- ③ SOURCE

Note: 1. $V_{GS(th)}$ selected code.

JEDEC : TO-220AB.

Note: 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.

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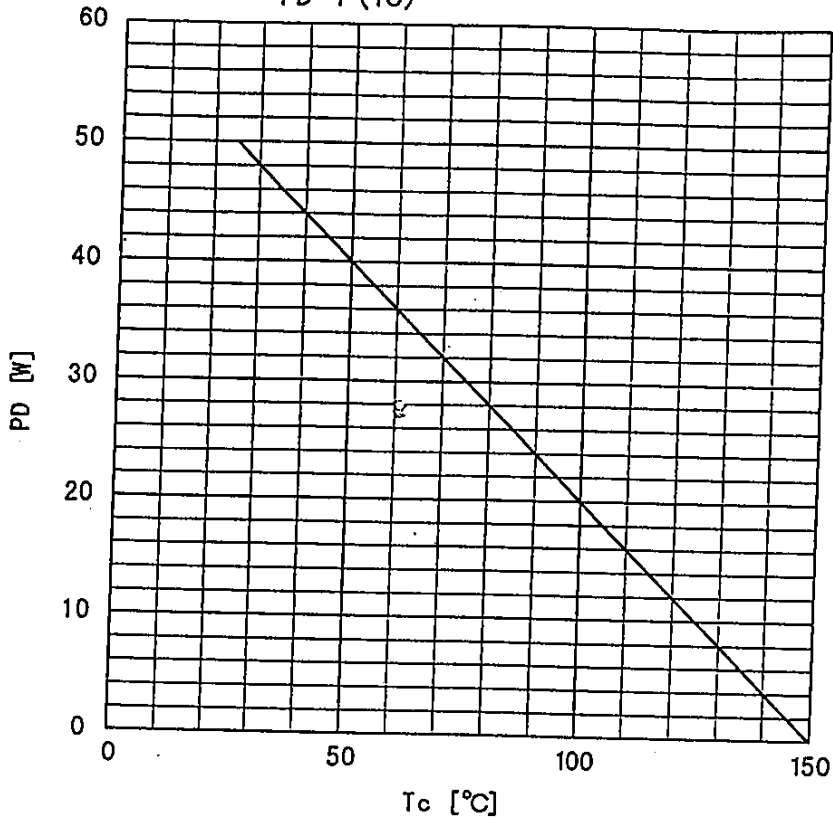
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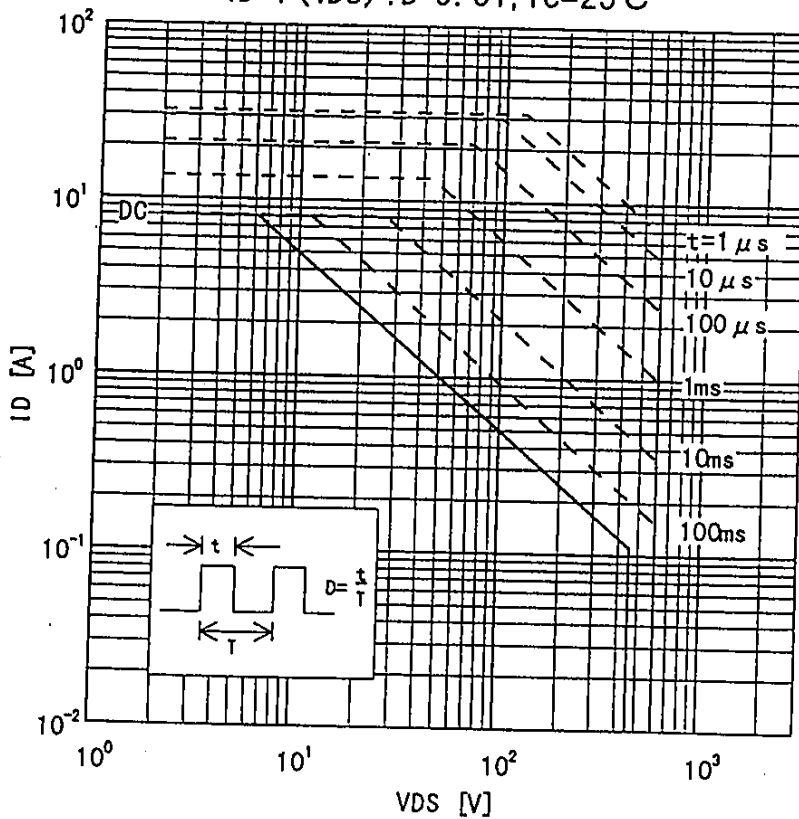
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Power Dissipation $PD=f(T_c)$



Safe operating area $ID=f(V_{DS}) : D=0.01, T_c=25^\circ C$



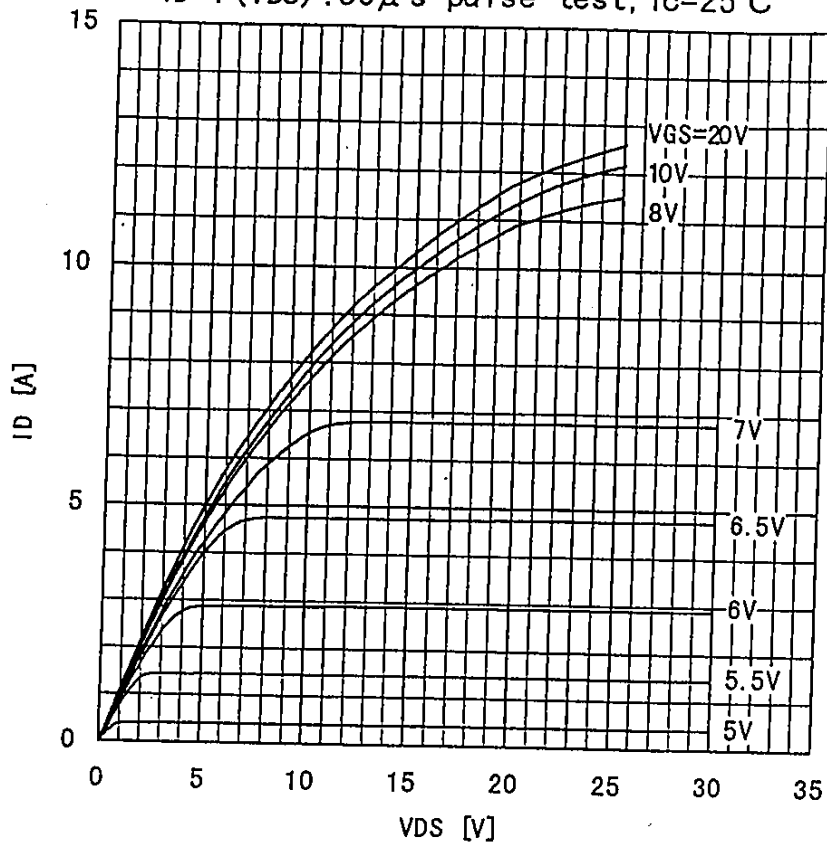
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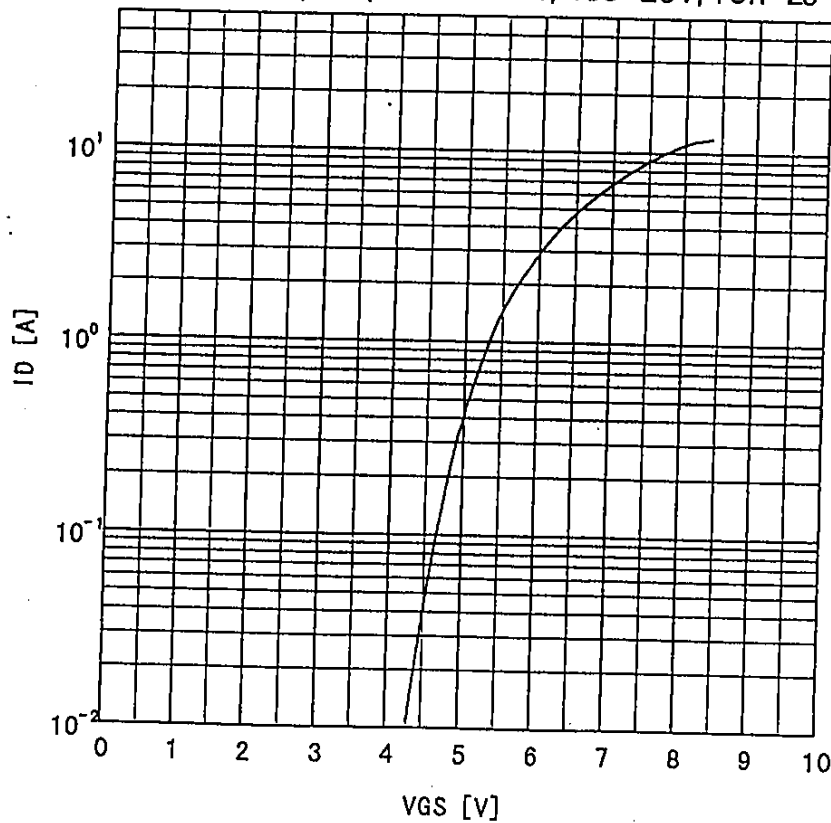
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Typical output characteristics
 $I_D = f(V_{DS}) : 80 \mu s$ pulse test, $T_c = 25^\circ C$



Typical transfer characteristic
 $I_D = f(V_{GS}) : 80 \mu s$ pulse test, $V_{DS} = 25V$, $T_{ch} = 25^\circ C$



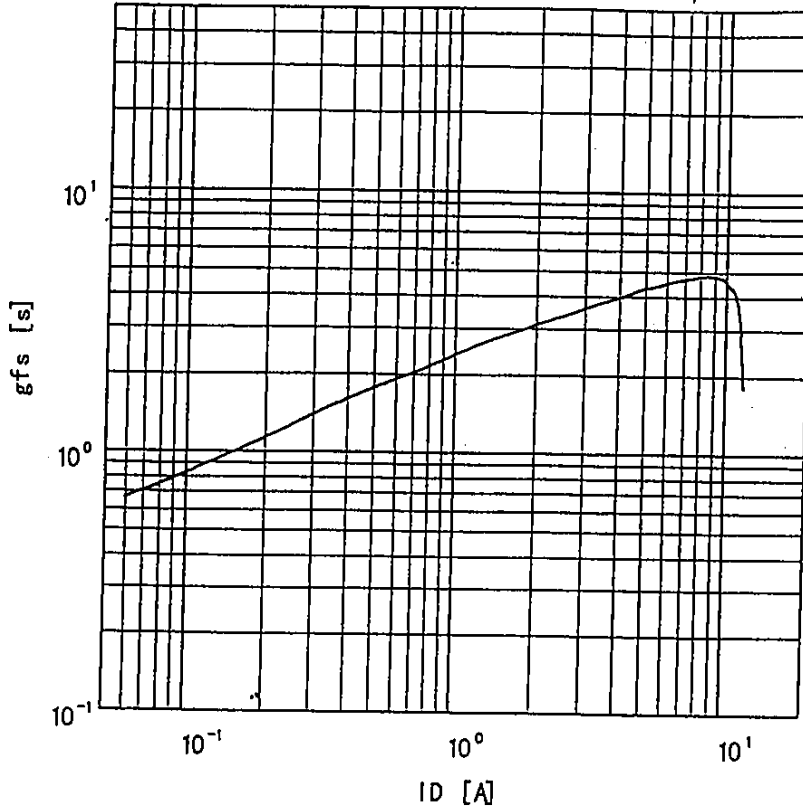
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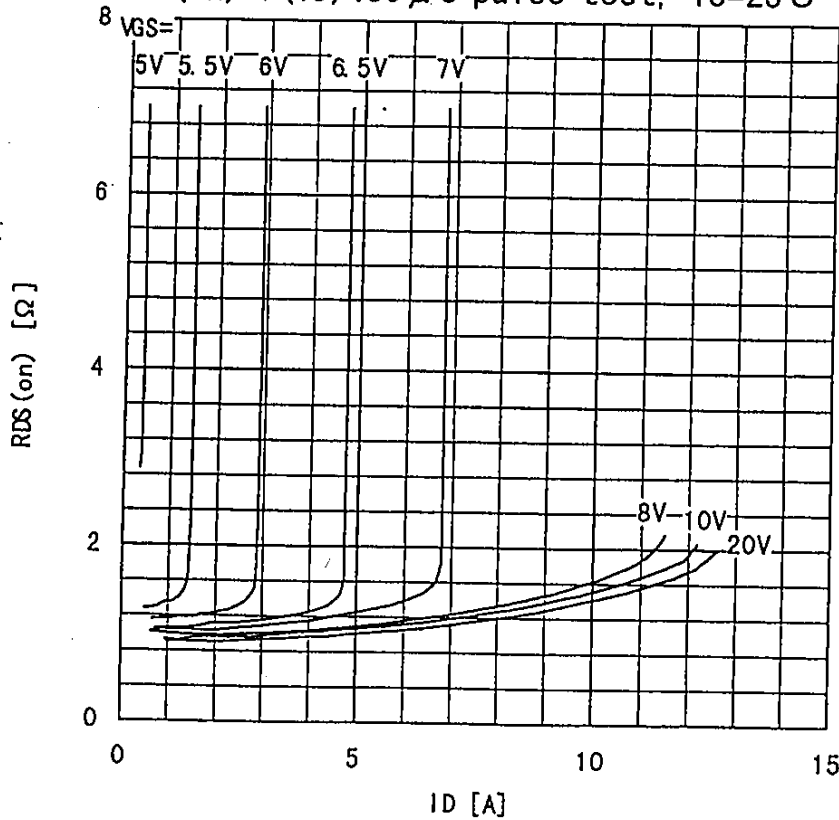
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Typical forward transconductance
 $g_{fs} = f(I_D) : 80 \mu s$ pulse test, $V_{DS} = 25V$, $T_{ch} = 25^\circ C$



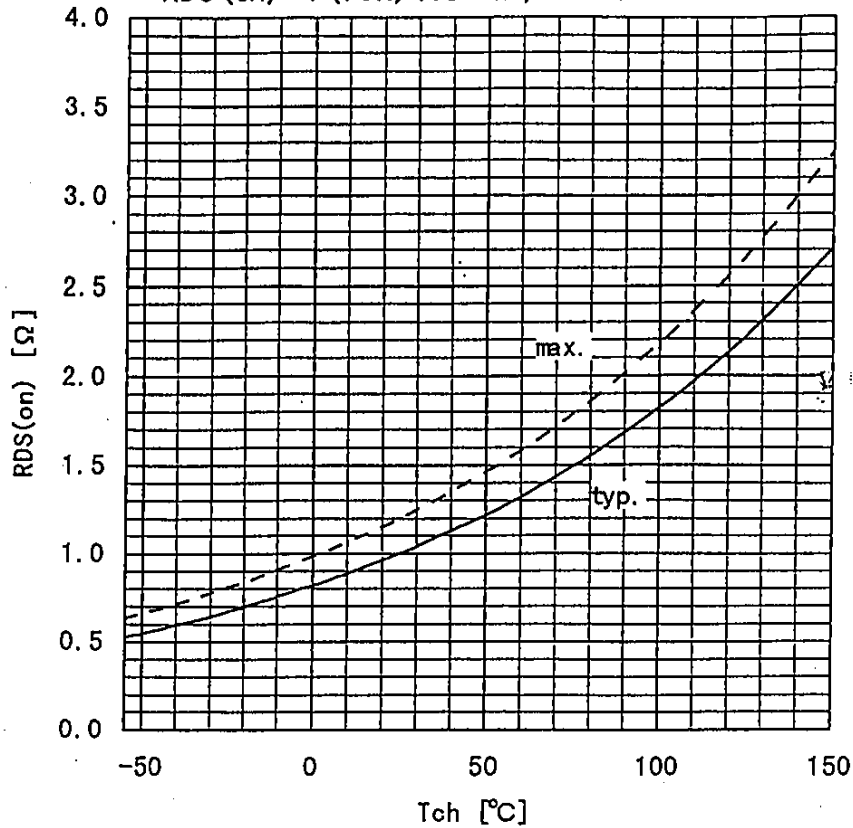
Typical drain-source on-state resistance
 $R_{DS(on)} = f(I_D) : 80 \mu s$ pulse test, $T_c = 25^\circ C$



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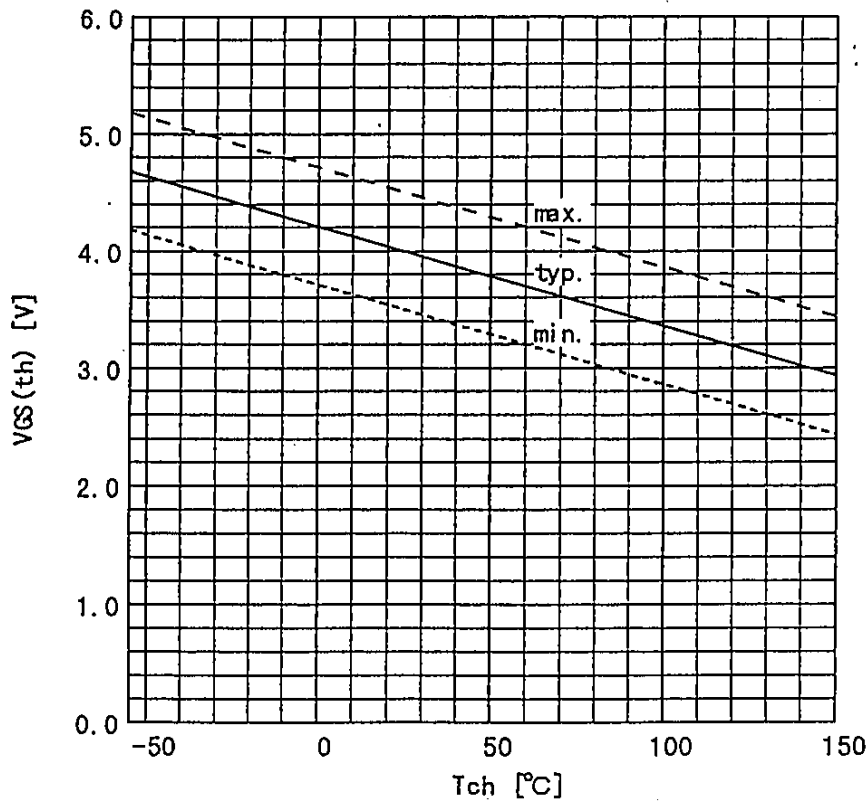
Drain-source on-state resistance

$R_{DS(on)} = f(T_{ch}) : I_D = 4A, V_{GS} = 10V$



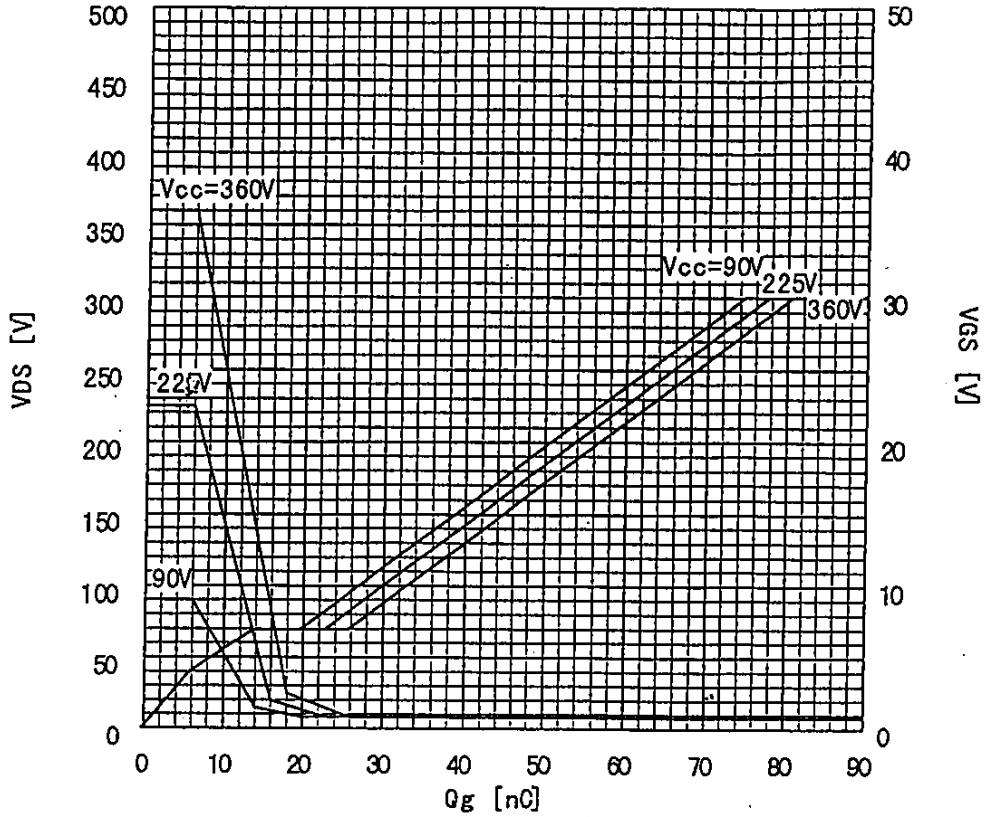
Gate threshold voltage

$V_{GS(th)} = f(T_{ch}) : I_D = 1mA, V_{DS} = V_{GS}$

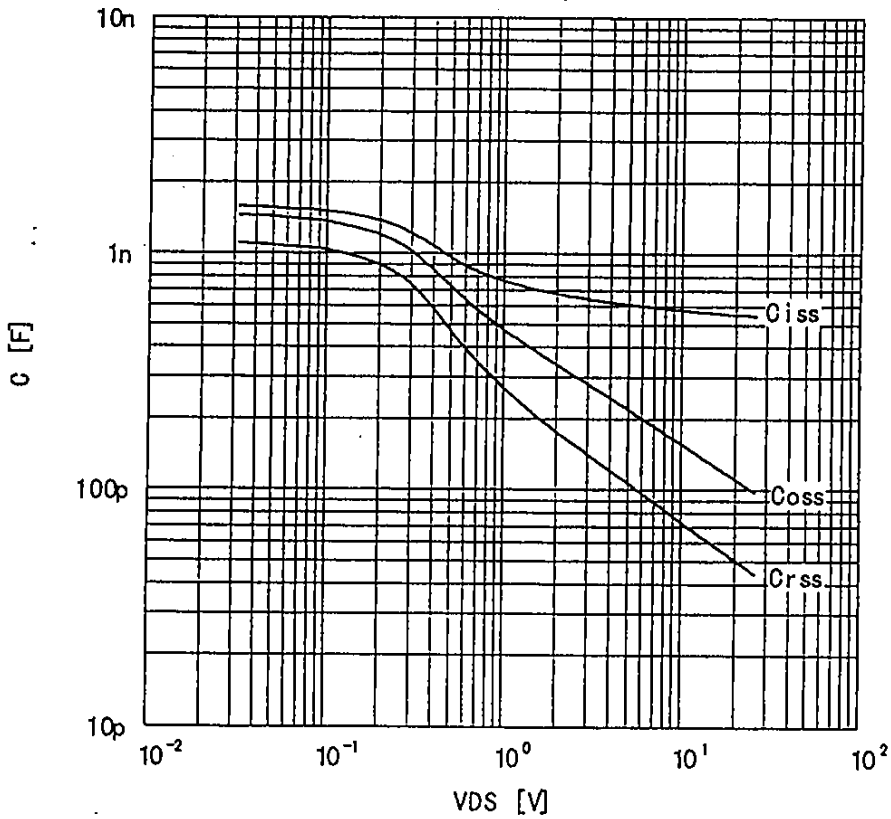


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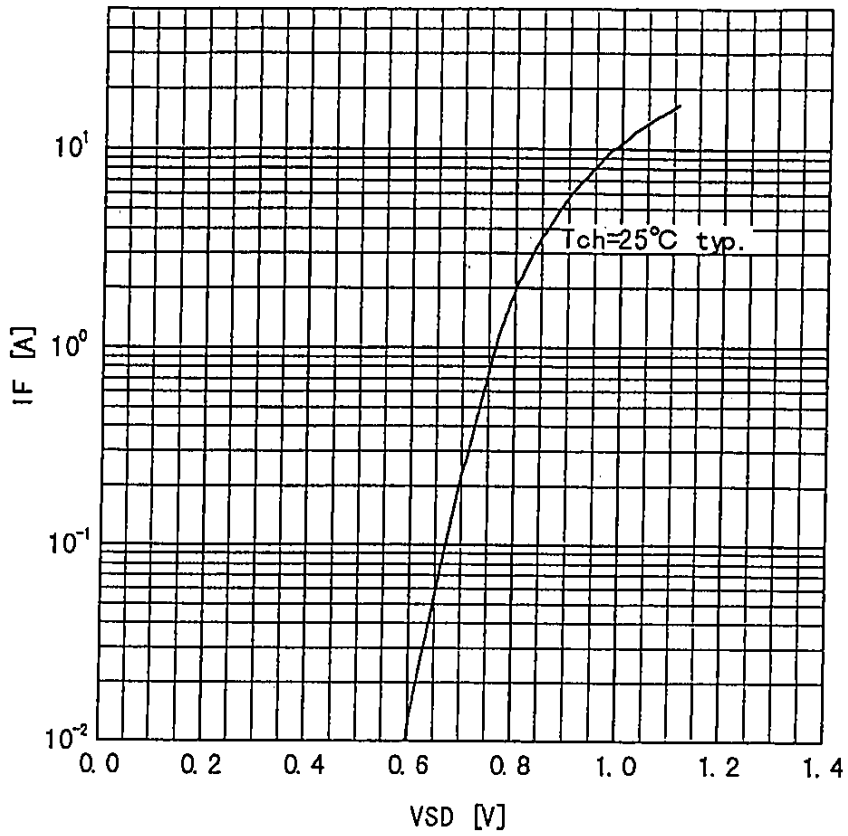
Typical gate charge characteristic
 $V_{GS} = f(Q_g) : I_D = 8A, T_c = 25^\circ C$



Typical capacitances
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$

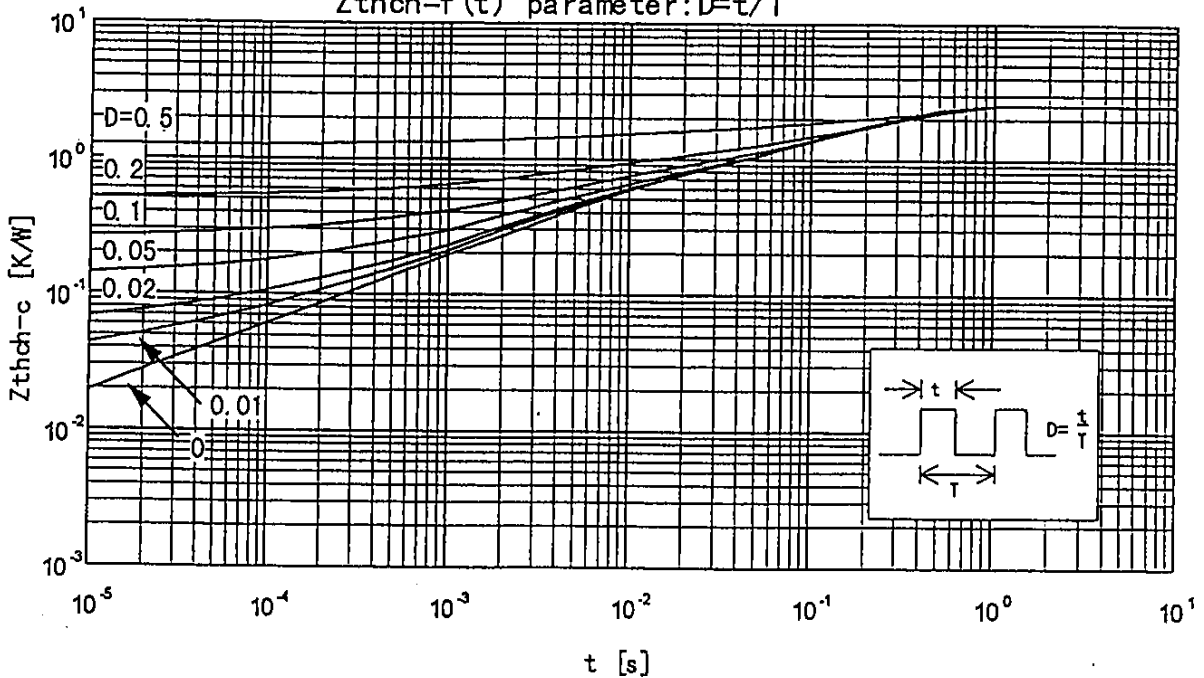


Forward characteristic of reverse of diode
 $I_F = f(V_{SD}) : 80 \mu s$ pulses test, $V_{GS} = 0V$



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Transient thermal impedance
 $Z_{thch} = f(t)$ parameter: $D = t/T$



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